REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1, 2, 4, 6, 7, 9, and 13 - 20 are pending in the present application. Claims 1, 2, 6, 7, 9 and 14 are amended. Claims 15 - 20 are new. Claims 1, 6 and 15 are independent claims.

Claim Rejections – Section 112

Claims 1, 2, 4, 13 and 14 stand rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps. Insofar as it pertains to the presently pending claims, this rejection is respectfully traversed.

Claim 1

Claim 1 is rejected as failing to show an inter-relationship between the energy balance calculation and the remainder of the claimed process. Claim 1 is also rejected as failing to show an inter-relationship between the thermal conductivity equation and the remainder of the claimed process.

With respect to the energy balance calculation, the Examiner suggests incorporating the limitations of claim 2 into claim 1 as a way of overcoming this rejection. Applicants hereby accept the Examiner's suggestion and so amend claim 1. With respect to the thermal conductivity equation aspect, Applicants hereby remove this limitation from claim 1 and now present it in independent claim 2 in a more comprehensive format that explains the relationship

between the thermal conductivity equation, a temperature distribution, and the presence of local temperature differences within a selected area.

Applicants respectfully submit that independent claim 1 now meets the requirements of 35 U.S.C. §112 because it shows a clear inter-relationship between all the steps of the claimed process.

Dependent Claims

Applicants respectfully submit that claims 2, 3, 4, 13, and 14 meet the requirements of 35 U.S.C. §112 at least by virtue of their dependency from independent claim 1.

Claim 14

Claim 14 is separately rejected under 35 U.S.C. §112, second paragraph, as being indefinite for use of the term "stationary" with respect to the temperature distribution. Applicants hereby amend claim 14 to clarify their meaning. Claim 14 now states that the temperature distribution is assumed to not change during fusing, which is what was meant by the term "stationary."

Conclusion

At least in view of the above, Applicants respectfully submit that claims 1, 2, 4, 13, and 14 all now meet the requirements of 35 U.S.C. §112, second paragraph. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Claim Rejections - § 103(a) – Andersson

Claims 1, 2, 6, 7, 13 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over International Patent Publication WO 01/81031 by Andersson ("Andersson"). Insofar as it pertains to the presently pending claims, this rejection is respectfully traversed.

Claim 1

Independent claim 1 pertains to a method of making a three-dimensional product, the method comprising, in pertinent part, fusing a selected area of a powder bed into a cross-section of the product and calculating an energy balance for the selected area, "said calculating including determining whether energy radiated into the selected area is sufficient to maintain a defined working temperature of the selected area; wherein said fusing said powder layer by supplying energy from a radiation gun also includes heating the selected area to the defined working temperature when the calculated energy balance indicates there is insufficient energy to maintain the selected area at said defined working temperature; and where said calculating an energy balance is performed before said fusing."

The Office Action admits that while Andersson teaches using a camera to sense temperature of a surface layer of powder (Page 8, lines 28 – 30), Andersson fails to teach or suggest calculating an energy balance as required by claim 1. The Office Action states that such an energy balance calculation is inherent Andersson because sensing a temperature and using it to modify radiation source output must include some sort of calculation at some stage in the process. Applicants respectfully disagree.

Unlike Andersson, which is directed at sensing temperature and using the sensory feedback to adjust an in-progress fusion operation, the present invention is directed at calculating the power required to keep the surface of an object at a given temperature and then setting an energy output level "before said fusing." Calculation is a more efficient way of handling temperature control and management compared to the use of a camera. An approach centered on calculation does not require a temperature measurement camera in order to operate and allows for energy levels to be pre-set before fusion is carried out, thereby allowing for faster operation. Andersson does not teach or suggest such a calculation-based instead of a sensor-based approach to temperature control where the energy calculation, and therefore the associated energy supply level are both performed and established "before said fusing" as required by independent claim 1. Applicants therefore respectfully submit that Andersson fails to establish *prima facie* obviousness of independent claim 1 or any claims depending therefrom.

Claim 6

Independent claim 6 pertains to an arrangement for creating a three-dimensional product, the arrangement comprising, in pertinent part, "a control computer which stores information about successive cross sections of the three-dimensional product, which cross sections build up the three-dimensional product, controls the beam guide according to an operating scheme, calculates an amount of supplied energy required to maintain at least one part area within each powder layer at a defined working temperature; and sets the calculated amount of supplied energy as a maximum energy output of the radiation gun before the radiation gun delivers energy to said at least one part area."

The Office Action admits, as it does for independent claim 1, that Andersson is a feedback-based system that uses a heat-sensing camera to adjust an in-progress fusion operation. Applicants therefore respectfully submit that Anderson teaches sensor feedback control or energy delivery. Anderson fails to teach or suggest a control computer that "sets the calculated amount of supplied energy as a maximum energy output of the radiation gun before the radiation gun delivers energy to said at least one part area" as required by independent claim 6. Applicants therefore respectfully submit that Andersson fails to establish *prima facie* obviousness of independent claim 6 for at least the same reasons at set forth with respect to independent claim 1.

Dependent Claims

Applicants respectfully submit that claims 2, 7, 13, and 14 are allowable at least by virtue of their dependency from independent claims 1 and 6.

Summary

At least in view of the above, Applicants respectfully submit that Andersson does not establish *prima facie* obviousness of independent claims 1 or 6 or any claims depending therefrom. Applicants note that Andersson does not teach or suggest establishing a calculated energy output level to maintain a working temperature before delivering energy to a part area during a fusion operation. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Claim Rejections - §103(a) – Andersson and Beaman

Claims 4 and 9 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Andersson in view of U.S. Patent 5,352,405 to Beaman ("Beaman"). Insofar as it pertains to the presently pending claims, this rejection is respectfully traversed.

Applicants respectfully submit that claims 4 and 9 are allowable at least by virtue of their dependency from independent claims 1 and 6. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

New Claims

Applicants respectfully submit that new claims 15 – 20 are allowable at least for the same reasons as set forth with respect to independent claims 1 and 6.

Conclusion

Since the remaining patents cited by the Examiner have not been utilized to reject the claims, but to merely show the state of the art, no comment need be made with respect thereto.

In view of the above amendment, applicant believes the pending application is in condition for allowance. Thus, the Examiner is respectfully requested to reconsider the outstanding rejections and issue a Notice of Allowance in the present application.

However, should the Examiner believe that any outstanding matters remain in the present application, the Examiner is requested to contact Applicants' representative, Naphtali Matlis (Reg. No. 61,592) at the telephone number of the undersigned in order to discuss the application and expedite prosecution.

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Respectfully submitted,

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